

CROSS-REFERENCE TO RELATED APPLICATIONS

U.S. Patent Number 4,654,573, discloses a Power transfer device, wherein the apparatus for transferring electrical power between a power supplying apparatus and power consuming apparatus and having a separable high frequency transformer with a primary permanently mounted to the power supply apparatus and a secondary mounted about the power consuming apparatus. The power supply apparatus includes a power supply circuit comprising a ferrite core transformer and capacitor forming a parallel resonant circuit. A driver drives the primary coil of the transformer. Power is transferred across the inductor to the resonant circuit as portions of a sine wave. The power supply circuit also includes an internal current sensing circuit to shut current build-up down when current in the resonant circuit becomes too high, and an external control loop which senses power demands of the charging control circuit delivered via an optical communications link within the separable transformer.

This technique provides the user with efficient means of contact-less power transfer from one device to another. The method described in U.S. Patent Number 4,654,573 allows not only power to be transferred but describes means to provide clocking of the power consuming apparatus as well as a feedback data link. Unfortunately, the U.S. Patent Number 4,654,573 does not teach how to build an efficient bi-directional data link between both apparatus. An obvious problem of the method described in U.S. Patent Number 4,654,573 is that the return data path requires significant energy consumption from the power consuming apparatus. It requires at least one LED to be powered on and thus effects the overall power balance of the system.

A need therefore exists for an improved means of providing contact-less power transfer between two devices coupled with an integrated bi-directional communication link, and consuming minimal amount of energy.